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Louisiana State University and Agricultural & Mechanical College

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Louisiana State University and Agricultural & Mechanical College, "Thirteenth annual report of the agricultural experiment stations of the Louisiana State University and A. & M. College." (1901). *LSU Agricultural Experiment Station Reports*. 344.
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THIRTEENTH ANNUAL REPORT

OF THE

Agricultural Experiment Stations

OF THE

LOUISIANA STATE UNIVERSITY

AND

A & M. COLLEGE,

FOR 1900.

TO THE GOVERNOR.

BATON ROUGE.

PRINTED AT THE TRUTH BOOK AND JOB OFFICE.
1901.

REPORT.

LOUISIANA STATE UNIVERSITY AND A. AND M. COLLEGE, }
OFFICE OF STATE EXPERIMENT STATION }
Baton Rouge, La., 1901. }

To His Excellency, W. W. Heard, Governor of Louisiana:

SIR—In accordance with the provisions of Section 2, of the Act of Congress to establish Agricultural Experiment Stations in connection with the colleges established in the several States, under the provisions of an Act approved July 2, 1862, and the Acts supplementary thereto, I beg leave to submit a report of the operations of the three stations, including a statement of the receipts and disbursements from July 1, 1899, to July 1, 1900:

STATION NO. 1.

SUGAR EXPERIMENT STATION, AUDUBON PARK, NEW

ORLEANS, LA.,

has continued along the lines described in previous reports. Sugar cane has received the largest attention. In the field, experiments to determine the manurial requirements of this plant have been continued on the same plats for eleven years. Four plats have been devoted to these experiments, known as the "Nitrogen," "Phosphoric Acid," "Potash" and "Application" plats.

On the Nitrogen plat, the questions requiring solution were: (1st.) Do our alluvial lands require nitrogen to grow profitable crops of sugar cane; and, (2nd.) If they do, in what forms and in what quantities shall it be used. On this plat the following forms of nitrogen were used, viz.: Nitrate of soda, sulphate of ammonia, dried blood, fish scrap, cotton seed meal and tankage. These were used in such quantities as to give twenty-four and forty-eight pounds of nitrogen per acre. They were used alone and in combination with mixed minerals (acid phosphate and sulphate of potash.) In addition, there were experiments throughout the plat with "no

manure" and with "mixed minerals" alone. There are twenty experiments of three rows each. The same manure has been used on each plat for eleven years.

The results of the first ten years were given to the public last year in Bulletin No. 59.

This plat has clearly demonstrated the following facts on these soils:

1st. That nitrogen is needed to grow maximum crops of sugar cane.

2nd. That nitrogen in the form of sulphate of ammonia is preferred to all others, followed in order by cotton seed meal, dried blood, tankage, nitrate of soda and fish scrap.

3rd. That quantities of nitrogen in excess of forty-eight pounds per acre, are rarely profitable with our prevailing climatic conditions.

The prevailing custom among the sugar planters of using cotton seed meal (either alone or mixed with acid phosphate) and tankage is in accord with the above results.

Similar questions relative to the requirements of cane for phosphoric acid were asked of the next plat. Here the soluble forms of phosphoric acid in dissolved bone black and acid phosphate, and the insoluble forms in ground bone, bone black, Thomas slag meal and floats, were used. They were used alone and in combination with basic mixture (sulphates of ammonia and potash). Such quantities were taken as to contain thirty-six and seventy-two pounds of phosphoric acid. Here, too, sub-plats, with "no manure" and with "basic mixture" alone, were regularly placed throughout the plat for comparison. This plat also contains twenty experiments.

The results of eleven years on these soils show:

1st. That phosphoric acid in relatively small quantities is needed for best yields.

2nd. That the soluble forms are usually to be preferred.

3rd. That quantities in excess of thirty-six pounds of soluble phosphoric acid per acre, are useless, if not injurious.

Like questions propounded to the potash plat have not been productive of positive results. Here, the forms of potash used were kainite, "the sulphate," "the muriate," "the carbonate," and "the nitrate of potash." These were used.

alone and in combination with "nitrogen phosphate" (Sulphate of ammonia and acid phosphate). Such quantities of each were used as to represent twenty-five and fifty pounds of actual potash.

Sub-plats of "no manure" and "nitrogen phosphate" occurred regularly throughout the plat.

The results of this plat have all been negative, no benefit apparently either in tonnage or sugar content of the cane. Several forms of the above, when used in the larger ration, seem to have acted injuriously upon the physical texture of the soil, making the latter stiffer and more difficult to properly till.

These results unmistakably declare, (1st) that nitrogen is the dominant ingredient needed by these soils to grow sugar-cane, and (2nd) that phosphoric acid in an available form is needed in comparatively small quantities, and (3d) that, as yet, these soils possess enough available potash to meet all the requirements of the sugar cane.

An acre of cane should therefore receive from thirty-six to forty-six pounds of nitrogen, and twenty-four to thirty-six pounds of available phosphoric acid, in order to grow the most profitable crop throughout a series of years.

In practice, due regard must be paid to the time which has elapsed since the land was in cow-peas, and the further removed the cane crop is from the latter the heavier must be the dose of nitrogen.

The fourth plat is devoted to the application of fertilizers. Having determined that nitrogen, the fugitive ingredient of fertilizers, is the one most needed for cane, the question arises whether this ingredient shall be given in one, two, or three applications. Nitrate of soda and sulphate of ammonia, on account of their ready solubility, were used as the forms of nitrogen and in quantities representing forty-eight pounds per acre. The mixed minerals were applied uniformly with the first application. There are three series of each experiment. 1st. All of the nitrogen applied with "mixed minerals" just before the soil is thrown to the cane after a stand is obtained. 2nd. One-half is applied with mixed minerals at this time, and the rest given at the second or third working

in May. 3d. One-third with mixed minerals as first application, one-third at second or third working in May, the remaining third at lay-by.

While individual years show decided gains of two and three applications over one, the results through a series of years indicate that one application is the least expensive and perhaps the most profitable.

Experiments in methods of cultivation have shown that the use of the cultivators only, in the cultivation of the crop after the middles have been split out, has resulted each year in decided gains. The plow is a most excellent implement when properly used, but should find no place in cultivation after the cane has well developed roots, or after the tilth has once been developed in the soil.

PEDIGREED CANE.

Numerous experiments have been conducted with a view of determining the influence upon the crop by selection of seed each year.

For over fourteen years, "tops from tops," "middles from middles," "butts from butts," "large cane from large cane," "medium cane from medium cane," and "small cane from small cane," "plant from plant," "first stubble from first stubble," and "second stubble from second stubble," have been planted, and results in field and sugar house carefully tabulated and compared. While indications point to suggestions of superiority, yet no very positive conclusions are deducible from tabulated results.

VARIETIES OF CANE.

The station has imported nearly every available foreign variety of cane and has had them under cultivation for years. Some of them have merit, but not deemed worthy of replacing our home canes. They are still grown, to study the influence of continuous cultivation upon them in this climate as regards their hardiness, sugar content, power of ratooning, etc. Hope has, however, been abandoned of ever securing from them a cane superior to our ribbon or purple varieties.

But high expectations are placed upon some of the

"SEEDLINGS"

which are now being disseminated throughout the sugar world.

Many years ago the station received from Prof. Harrison, of Demerara, a number of seedlings. These have ever since been carefully experimented with, both in the field, in the laboratory and in the sugar house. Of these, two, D74 and D95 have shown qualities admirably adapted to this soil, in tonnage, sugar content, hardiness and vigor of growth. Two years ago a distribution of these canes among the planters of this and adjoining States began. Last year over 1250 bundles weighing in the aggregate over thirty tons, were shipped throughout Louisiana, Texas, Mississippi, Alabama and Georgia. Our supply was totally inadequate for the demand, and over 500 applications were referred to the crop of the present year. These canes have been distributed with the request of thoroughly testing them before cultivating on a large scale. Should they prove (especially D74) as satisfactory elsewhere as here, they will be a valuable addition to the sugar interests of the South.

There are also on trial a number of seedlings received several years ago from Barbados, and twelve new seedlings obtained during the past summer from Prof. Hart, of Trinidad. This large number may give a variety superior even to D74 and D95.

SUGAR HOUSE.

In the sugar house, an extensive series of experiments in clarification, filtration, evaporation and cooking, has been carried on, and the results are now in manuscript form awaiting publication.

Besides these a series of systematic experiments with artificial mixtures of sugar and other substances usually found in cane juice, has been carefully conducted in the sugar house, controlled by chemical analysis, with a view of determining the restraining influence of these added substances to the crystallization of sugar. These extensive experiments are nearly completed and will be given at an early day to the public.

ALFALFA

continues to thrive upon this station, though the prolonged drouth of last season was more destructive than ever before. Planted in October upon well prepared land, at the rate of fifteen to twenty pounds of seed per acre, and well covered, it will afford the first cutting in March or early in April. Six to eight cuttings a year may be expected. Fed either green or cured, it is a valuable forage, rich in protein and exceedingly palatable to all animals.

CLOVER AND GRASSES.

It has been found that seed from home-grown crops of clover and grasses were far superior in their germinative qualities to those purchased elsewhere. The crops were also superior in vigor of growth, and yield per acre.

The necessity of planting these crops here in early fall, before the new crop of grass and clover seeds are on the markets, forces us to use seed over one year old. The use of such seed may in part account for the poor stands obtained, and for the excess of seed so often recommended by many planters to be sown per acre. It now appears that for the best results our clover and grass seeds must be raised at home. This assertion is at present accentuated at both this station and Calhoun, in the vast superiority of the Rescue grass from home raised seed over that purchased.

FORAGE CROPS.

In addition to those already reported, and which have become popular throughout the State, the station has now growing a large number of vetches, lupines, beans, etc., from foreign countries, some of which were furnished by the United States Department of Agriculture, and the rest by its correspondents in foreign countries.

CORN.

A large number of varieties of corns gathered from all parts of the world, were cultivated at this and the other stations last year. While many of these have decidedly superior qualities, nearly all are wanting in that quality most desired in

this section, viz., proof against weevils. Hence the tenacity with which the planters of this section of the State adhere to the "yellow Creole," a nearly weevil-proof variety.

COTTON.

A large number of foreign and domestic varieties of cotton have also been tried at this and other stations. Several varieties from India and Egypt have been carefully grown with the hope of acclimating them, especially the latter, and thus assist in inaugurating an industry which will supply the mills of this country with home raised Egyptian cotton, and stop the present large importation. These cottons have been ginned upon an Egyptian roller gin and marketed. Neither the quantity produced per acre, nor the price obtained per pound, warrants the extended cultivation of these cottons. Experiments with Sea Island cotton have been more successful. The yields per acre have been as high as 1500 pounds of seed cotton, and the prices obtained for the lint were seventeen cents to thirty cents per pound, in Charleston, South Carolina.

The station received several years ago a few seeds of a variety of cotton which had been developed by Col. Griffin, of Greenville, Miss. It has since planted and selected this variety, until last year quite a crop was grown. The lint is extremely long, the plant a vigorous grower and a prolific bearer of fruit.

It is adjudged an all around excellent variety, and this year, through the franking privilege accorded us by the United States Department of Agriculture, over three hundred small packages of this seed have been distributed among our farmers and planters.

ORANGE TREES.

The small grove of budded trees started since the destructive freeze of February, 1899, is now in excellent condition and promises a few oranges the present year. There are over fifty varieties.

In addition to this grove, there are over one hundred orange trees mentioned in the last annual report, as hybrids between the hardier sweet varieties and the non-edible Japanese

trifoliata, growing on the grounds of the station. These trees were furnished by the Department of Agriculture at Washington, and are being carefully cultivated until they bear fruit. If the fruit should prove edible and desirable, the trees will be used for furnishing buds for future orchards. If they be worthless, the trees will be uprooted and destroyed. Out of the sixty and odd varieties, it is hoped that one or more may prove desirable.

TEA PLANTS.

In co-operation with the United States Department of Agriculture, this Station is growing over 600 tea plants, with a view of testing practically the raising and curing of tea leaves. The success of the industry in South Carolina has stimulated the Department of Agriculture to try it elsewhere in the South.

REMOVAL OF SUGAR HOUSE, BARN, ETC.

Since the last report, the city council of New Orleans has granted to the Illinois Central Railroad the right of a double line of tracks along the river from Southport to Stuyvesant docks. This grant necessitated the removal of the sugar house, boiler house, barn, stable and stabler's house by the railroad. They were moved up nearer to the other buildings of the station, and everything reconstructed in good working order. The fences, water pipes, etc., were also removed.

FERTILIZER AND PARIS GREEN CONTROL.

In addition to the regular work of the station, over 1800 analyses of commercial fertilizers and of paris green have been made during the year under Acts 126 of 1898 and 131 of 1890.

The present system of inspection and analysis has created a confidence in the buyer and care and caution in the seller. Both are greatly benefited by the law, which affords ample protection to the purchaser, and advertises well the wares of the seller.

The work, however, is very heavy, requiring almost the entire time of four to five chemists to perform. It is also ex-

pensive, since every purchase, whether one sack or a thousand tons, must be inspected and sample analyzed.

Since the last report the station has lost the efficient services of its Assistant Director, Mr. R. E. Blouin. He has been elected to the directorship of the Hawaiian Experiment Station, Hawaii, as the successor of Dr. Walter Maxwell (who was also formerly connected with this station), who has now been called to Queensland, Australia, as the Director of the Sugar Experiment Station recently established there.

Mr. P. L. Hutchinson, of the chemical department of the Department of Agriculture of Georgia, has recently been appointed chemist of this station, and placed in charge of the fertilizer and paris green work.

Mr. S. Baum, a graduate of the Louisiana State University and A. & M. College, Baton Rouge, in 1899, and since then an assistant chemist at this station, has recently accepted a position upon a sugar estate in Mexico, and has left for his new home. Mr. H. E. Wright, another one of our chemists, has recently accepted the position of chemist on the Waialea Plantation, Hawaii, and will leave us in a few days.

Mr. T. W. Young, Jr., who graduated last June at the Louisiana State University and A. & M. College, at Baton Rouge, entered in July upon the duties of assistant chemist at this station.

STATION NO. 2.

STATE EXPERIMENT STATION, BATON ROUGE, LA.,

has made no changes in its efficient staff since the last report.

THE FARM.

Experiments with fertilizers on corn and cotton, similar to those described at Audubon Park on sugar cane, have been in continuous operation on this station since 1888. The results here are slightly different from those obtained on cane at Audubon Park. While it is shown that both nitrogen and phosphoric acid are needed by the soil to grow maximum crops, it is yet quite clear that phosphoric acid is the domi-

nant ingredient in all fertilizers which produce the largest yields. This is especially noticeable in the growth of corn.

The rotation plats, carrying oats, solid cow-peas, cotton, corn and cow-peas, a three-year system involving five crops, two of which are leguminous, are giving decided responses to the question of the best method of restoring the soils of the bluff regions.

A number of varieties of corns and cottons were grown last year, with generally satisfactory results. Quite a number of farmers and planters have been supplied with seeds of the choicest varieties of these crops.

FORAGE CROPS.

Besides the usual sorghums (saccharine and non-saccharine), millets, teosinte, etc., usually grown, this station has successfully established a field of lespedeza and one of the red clover. The former yielded a large quantity of excellent hay, while the latter, besides a crop of early hay, afforded excellent grazing far into the winter for a number of cattle. There is also an acre or more of a magnificent crop of

"ALFALFA"

which is greatly admired by the visiting farmers and planters.

There are also good stands of several varieties of grasses, besides a beautiful crop of Fall sown oats.

TOBACCO.

The experiments in tobacco reported last year, have been largely repeated. The full shade was discarded and only the half shade employed in addition to numerous experiments in the open field. A number of varieties were tested, but effort was mainly concentrated upon the production of wrappers from the Havana and Sumatra seed.

The crop was harvested in excellent order, and cured thoroughly in the barn. It is now in the pile undergoing fermentation. Later on it will be made into cigars. The experiments up to date, would indicate that the soil of this station is rather too heavy for the production of the largest and best crop of wrappers. While selection will give some ideal wrappers, which work well into excellent cigars, the

proportion of these to the entire crop is too small to permit of large profit. Reference is made to first-class Sumatra and Havana wrappers, and not to the larger and cheaper leaves, often used in low-priced cigars.

It is believed that the same types of tobacco, under similar treatment upon the light loamy soils of North Louisiana, will yield far better results, and therefore the present year will find the experiments duplicated at Calhoun.

CATTLE.

Besides the small herd of pure Jerseys, there are a number of grade Short Horn cows, which were imported two years ago for Texas fever experiments. Later a pair of pure Herefords were imported for breeding purposes. After immunization by inoculation, this couple were turned out with the grade Short Horn herd. Up to date there are several fine grade Hereford calves, which will furnish a foundation for a future beef herd.

A pair of pure Red Polls, purchased for the use of the North Louisiana Experiment Station, have just been successfully inoculated at the Infirmary at Baton Rouge. As soon as the Spring opens they will be shipped to Calhoun and will furnish a start for that section, of a dual purpose breed, believed to be the ideal one for the small farmers of that section.

TEXAS FEVER.

Mention was made in the last report of the experiments in the "immunization" of Northern cattle to the Texas fever. Since that report the station has inoculated scores of cattle imported by the farmers of the State from the North and the results have been highly satisfactory, as will be shown by a bulletin now in preparation.

During the present winter the finest specimens of Jerseys, Herefords and Red Polls have been treated and so far with perfect success. About a dozen of the fine Herefords, exhibited and sold at the great Chicago Fat Cattle Show in December, were bought by an enterprising citizen of this State, and have been successfully inoculated.

The valuable additions to our live stock will soon be apparent in the improved beeves on our market, and the increased price of the animals on the farm.

CANE BORER.

In certain sections of this State, this insect last year was quite destructive. At the request of the Sugar Planters' Association, an investigation of the ravages of this insect was undertaken and a report made to that body in January. Simultaneously, Prof. Morgan began a thorough investigation into the winter habits of this pest, and has studied it in the field and laboratory, and though his work is yet incomplete, enough has been learned to enable him to advise intelligently those planters who are afflicted with its presence. When his studies are completed, it is expected to publish the results in bulletin form.

Prof. Dodson has been busily engaged during the past year in valuable botanical and bacteriological work. Among the latter is a process of sterilizing syrups and molasses, and drawing from the vessels containing them samples, at any time, through a sprigot so constructed as to sterilize the entering air by passage through a tube of sterilized cotton.

This process, when perfected, will be given to the public and it is believed, if properly operated, will be of great value to syrup and molasses dealers of the State.

Dr. Dalrymple, besides superintending in person the Veterinary Infirmary, where so many valuable animals have been inoculated, has been repeatedly called to different parts of the State, to assist in the determination and eradication of contagious and infectious diseases among stock.

STATION NO. 3.

NORTH LOUISIANA EXPERIMENT STATION, CALHOUN, LA.

Since the last report, Major J. G. Lee, Assistant Director, has resigned and again accepted the position of State Commissioner of Agriculture and Immigration. His valuable services, though lost directly to the station, are now available to the entire State, and every branch of agriculture is receiving his fostering care and attention.

Mr. D. N. Barrow, formerly Assistant Director of the State Experiment Station, Baton Rouge, has been appointed to this station, and entered upon his duties last summer.

The crops harvested last year were the finest ever grown on this station, some varieties of corn yielding as high as seventy bushels per acre. This crop was harvested and shredded as described in last report, and has furnished valuable forage for sheep, cattle, mules and horses of this station. Attention is again called to the large waste of forage material, by leaving the corn stalks in the field, and it is hoped that the increased interest in cattle growing in this State will aid in eliminating this useless loss of valuable forage, and make it a basis for a maintenance of many thousand cattle during the winter.

The rotation plats on this station are a great success, and serve as an object lesson to the farmers of this section, showing plainer than words can describe, the ease and rapidity with which these soils can be resuscitated.

These plats are duplicated with and without manures.

With such a system of rotation, aided by proper fertilization, every worn acre of North Louisiana can be rapidly improved and brought up to a condition which will permit of profitable culture. Along with the improvement of the soils, come annually profitable crops.

Fertilizer experiments similar to those described at the other stations, have also been conducted here. The results are similar to those at Audubon Park, with decided emphasis upon the necessity of nitrogen for every crop grown.

Nitrogen is the first and crying want of these soils. Phosphoric acid, though of secondary consideration, is yet required in small quantities for the best results.

TOBACCO.

Experiments, under the management of Mr. Allen, an expert from North Carolina, have not been successful either last or this year. The crop was not handled with intelligence either in the field or barn.

The present year it will be handled under the supervision and direction of the assistant director and farm manager of

the station. In addition to the yellow leaf varieties which are known to succeed well in this section, extensive experiments will, the present year, as elsewhere remarked, be made with the cigar types. The resemblance of the soils of North Louisiana to those of Florida, justifies the hope that the finest Sumatra and Havana wrappers can be successfully grown.

LIVE STOCK.

Mr. W. T. Carter, who has had charge of the stock of the station, resigned in October last to accept a position at the Pennsylvania Agricultural College, and his place has been filled by Mr. Albert N. Hume, of Indiana, a graduate of the Purdue University. Mr. Hume entered upon his duties in December.

The dairy is continued upon a high plane of excellence, a model for the education of the farmers of this section. It has taught hundreds of farmers the proper methods of manipulating milk and butter, and the proper feeding and care of milch cows. Many farmers are now selling first-class butter in the towns and villages of North Louisiana, and a few are sending to distant markets.

As elsewhere remarked, this station is preparing this section of the State for the introduction of the dual purpose cow, an animal believed to be suitable to the environments of the small farmer. It has already the Devon breed, and has recently imported a pair of Red Polls. It is claimed that the Jersey, now omnipresent in this section, has served a useful purpose in teaching the farmer how to make good butter. This accomplished, its usefulness to the farm is considerably abridged by the inability to sell at remunerative prices, the male offspring. Hence the supposed adaptability of the so-called dual purpose cow.

SHEEP.

There are four breeds of sheep on this station, the Dorset, the Merino, the Southdown and the Shropshire. There are grades, also, of each flock.

For some years the station has been suffering with the loss of lambs in summer, and occasionally an imported animal

would die. A study of the cause has revealed the existence of a minute intestinal worm (*Esophagostoma Columbianum*). This worm or parasite bores into the tissue of the bowels and causes enlargements, which give to the disease the name "nodular disease of the intestines," or vulgarly, "knotty guts." Investigation has shown that the disease is quite prevalent in many parts of the State.

Butchers of Baton Rouge assert that at times a majority of the sheep slaughtered for the local market are affected with this knotty or lumpy condition of the intestines, which renders them totally unfit for sausage casings. The presence of this worm is a menace to the sheep industry of this State, and perhaps of the South, and steps have recently been taken looking to a study of its life history, and, if possible, its eradication.

To this end Dr. Dalrymple and Prof. Morgan have recently secured some sheep affected with nodular disease, and will begin a thorough study of the parasite. It is intended by Dr. Dalrymple to endeavor to infest a small pasture lot at the station with these worms by placing on it, for a time, sheep that are known to be affected. Subsequently, healthy animals will be placed upon the same lot, and if they become diseased it will prove the supposition that animals become affected by grazing on pastures previously infested by diseased sheep. Later, this pasture lot will be ploughed up, and, when in condition, healthy sheep will be again placed in it to graze. Should such animals then remain free from this disease, it will go to show that the worms on the pastures can be destroyed, or rendered hors du combat, by turning over the ground. Prof. Morgan intends making a study of the parasite from a life-history standpoint. It is hoped that valuable information, which may be turned into practical utility, may be secured from these investigations.

Apparently not all breeds have suffered alike. Two years ago a pair of each of the above breeds were bought. Of the Shropshires, one buck and five ewes, all young, were imported. The Shropshires, Southdowns and Dorsets, have suffered perhaps in the order named. While the Merinos have not yet had a loss of any kind.

At present this disease seems almost to forbid the introduction of pure breeds in this State. This is truly to be regretted, and every effort will be made by the stations to ameliorate this condition, and to adapt this State to the successful growing of the finest herds of sheep.

HOGS.

The following breeds are kept at this station: Berkshire, Essex, Poland China and Red Jerseys. The increase is usually taken as fast as it occurs, by the farmers of the State.

FORAGE CROPS

are grown quite extensively, both in quantity and variety. The grasses and clovers are at present looking well, and alfalfa has given several large cuttings during the past year. A series of forage crops ripening in succession, was grown last year, and gathered by hogs which, with the use of movable fences, were permitted to eat up each patch before being admitted into another. The hogs were weighed at stated intervals and the increase carefully recorded.

ORCHARDS.

The new orchard mentioned in the last report, has made a vigorous growth during the year, and not a tree has died. It promises a thorough test of the adaptability of many varieties to this section. The old orchard still contains some valuable trees of several varieties of pears and apples. It is gratifying to record the complete eradication of the "blight" from the station, after years of persistent efforts.

The last camp meeting and fair, held in October, on the grounds of the station, under the auspices of the North Louisiana Agricultural Association, was largely attended and greatly enjoyed. It was opened with a barbecue given by the citizens of the vicinity to the old Confederate soldiers, and was enjoyed by several hundred veterans, and scores of their friends and admirers.

GEOLOGICAL SURVEY.

"The Report for 1899," a synopsis of which was given in the last year's annual, has been published. It is a handsome-

ly printed and illustrated volume of 354 pages, and has been well received by the public. The demand for the book continues both from our own citizens and from those seeking information relative to the resources of the State.

Prof. Gilbert D. Harris, of Cornell University, is still in charge of the survey, and is now in the field, assisted by Mr. J. Pacheco. The results of the work for 1900-1901 will be published in a large volume during the coming summer.

Mr. A. C. Veatch, the efficient assistant of Prof. Harris last year, has resigned and has entered as a student in Cornell University, where he purposes graduating.

In the study of artesian wells, and the strata supplying the water, a large amount of information has been obtained. The rate of flow and the depth of wells have been determined in the field, and the analysis of the waters made in the laboratory.

SOIL SURVEY

mentioned in the last report will be continued. It has, however, been found almost impossible to map the soil areas which were examined, until a topographical survey of the State is made. Preliminary arrangements have been made with the United States Geological Survey to begin the work during the present year. The soils obtained are being analyzed both physically and chemically, as fast as our limited force can make them. Prof. Milton Whitney, chief of the "Division of Soils," Department of Agriculture, contemplates a continuance of the soil survey under arrangements similar to those described last year.

FARMERS' INSTITUTES

were held in many of the parishes of this State, under the direction of Major J. G. Lee, Commissioner of Agriculture and Immigration. Nearly every member of the staff took an active part in these Institutes, and it is believed that the good accomplished by these efforts more than compensated for their absence from official duties.

VISIT TO HAWAII.

In July last, by request, and under a commission from the

Hon. Jas. Wilson, Secretary of Agriculture, Washington, D. C., the director of this station visited the Hawaiian Islands, studied the agricultural resources, and located an Experiment Station on the Island of Oahu, near Honolulu.

On returning, a lengthy report was made, which was transmitted by President McKinley to the House of Representatives with the request that it be printed. This report, with numerous illustrations, has been published as a House document, and may be obtained from any Congressman.

The following constitute the present staff of the stations:

SUGAR EXPERIMENT STATION NO. 1.

Postoffice, Audubon Park, New Orleans, La.

William C. Stubbs, A. M., Ph. D., Director.
 P. L. Hutchinson, B. S., Chemist.
 R. Glenk, Ph. G., B. S., Chemist.
 H. E. Wright, B. S., Assistant Chemist.
 T. W. Young, Jr., B. S., Assistant Chemist.
 George Chiquelin, Sugar Maker.
 W. B. Clayton, M. S., Farm Manager.
 Gilbert D. Harris, Geologist.
 James K. McHugh, Secretary and Stenographer.

STATE EXPERIMENT STATION NO. 2.

Postoffice, Baton Rouge, La.

William C. Stubbs, A. M., Ph. D., Director.
 ———, Assistant Director.
 Simon Baum, Chemist.
 W. R. Dodson, A. B., B. S., Botanist and Bacteriologist.
 H. A. Morgan, B. S. A., Entomologist.
 W. H. Dalrymple, M. R. C. V. S., Veterinarian.
 F. H. Burnette, Horticulturist.
 James Clayton, Farm Manager.

NORTH LOUISIANA EXPERIMENT STATION NO. 3.

Postoffice, Calhoun, La.

William C. Stubbs, A. M., Ph. D., Director.

D. N. Barrow, B. S., Assistant Director.
 Maurice Bird, B. S., Chemist.
 Jas. F. Harp, B. S., Chemist.
 T. I. Watson, Farm Manager.
 E. J. Watson, Horticulturist.
 Albert N. Hume, Dairyman and Poultryman.

At the end of this report will be found a correct exhibit of the receipts and expenditures arising from the Hatch Bill for the fiscal year ending June 30, 1900. It shows that expenditures have equalled receipts.

There is also given a supplementary statement of receipts from all sources and expenditures of every kind.

All of which is respectfully submitted.

WILLIAM C. STUBBS,
 Director.

STATEMENT OF RECEIPTS AND EXPENDITURES OF THE LOUISIANA
 AGRICULTURAL EXPERIMENT STATIONS, IN ACCOUNT
 WITH THE UNITED STATES APPROPRIATION:

1900	CR.	DR.
The receipts from the Treasurer of the United States for the year ending July 1st, 1900.....		\$15,000.00
By salaries.....	\$ 7,937.85	
By labor.....	2,595.48	
By publications.....	1,659.82	
By postage and stationery.....	452.13	
By freight and express.....	269.07	
By heat, light and water.....	217.93	
By chemical supplies.....	160.84	
By seeds, plants and sundry supplies.....	506.23	
By fertilizers.....	44.02	
By feeding stuffs.....	341.49	
By library.....	141.58	
By tools, implements and machinery.....	227.31	
By scientific apparatus.....	85.70	
By live stock.....	360.55	
	\$15,000.00	\$15,000.00

We, the undersigned members of the Board of Agriculture and Immigration, to whom is entrusted the disbursement of the above funds, do certify that we have examined the accounts of the Experiment Station of the Louisiana State University and Agricultural and Mechanical College, for the fiscal year ending June 30, 1900, and have found the above classification to be correct, and the receipts for the time

named are shown to be \$15,000.00, and the corresponding disbursements are \$15,000.00, for all of which the proper vouchers are on file, and have been examined by us and found correct.

(Signed)

J. G. LEE,
Commissioner of Agriculture and Immigration.

WM. GARIG,
Vice-President of Supervisors and ex-Officio
Member of Board of Agriculture.

SUPPLEMENTARY STATEMENT.

1900.	CR.	DR.
To receipts from other sources than the United States, for the year ending July 1, 1900:		
To Balance, July 1, 1899.....		\$12,830 42
State appropriation		15,000 00
Geological survey fund.....		3,000 00
Insurance		2,005 00
Fertilizer and paris green fund.....		5,614 25
Farm products.....		1,663 90
Miscellaneous receipts.....		144 42
		<hr/>
By Salaries.....	\$10,786 67	\$40,163 99
Labor.....	4,927 68	
Freight and express.....	510 85	
Heat, light and water.....	413 77	
Chemical Supplies.....	305 38	
Seeds, plants and sundry supplies.....	961 14	
Fertilizers.....	257 21	
Feeding Stuffs.....	648 36	
Tools, Implements and Machinery.....	431 58	
Furniture and fixtures.....	194 07	
Traveling expenses.....	457 05	
Contingent expenses.....	1,678 79	
Building and repairs	6,605 48	
Insurance	222 75	
Geological survey.....	3,000 00	
	<hr/>	31,400 78
By balance July 1, 1900.....		\$8,763 21

